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REMARKS

Claims 1, 3-5, 7-14, 16-19, and 21-25 are currently pending in the subject application and are presently under consideration. A listing of all pending claims is found at pages 2-5 of this Reply. No claims have been amended herein.

Favorable reconsideration of the subject patent application is respectfully requested in view of the comments herein.

I. Rejection of Claims 1, 3-5, 7, 11-14, 16-18, and 21 Under 35 U.S.C. §103(a)

Claims 1, 3-5, 7, 11-14, 16-18, and 21 stand rejected under 35 U.S.C. §103(a), as being unpatentable over U.S. Patent No. 6,181,097 issued to Li *et al.* and in view of U.S. Patent No. 5,546,374 issued to Kuroda *et al.* Applicants' representative respectfully requests that this rejection be withdrawn for at least the following reasons. Neither Li *et al.* nor Kuroda *et al.*, alone or in combination, teach or suggest every aspect of applicants' invention as set forth in the subject claims.

To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP §706.02(j). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The subject invention relates to defect detection, repair, and/or removal in a semiconductor substrate, and in particular to systems and methods that employ each of a measuring tip and a scribing tip and wherein substrates and/or defects *are mapped into a grid pattern* for removal and/or repair. Independent claim 1 sets forth "a scanning probe microscope that has a measuring tip and a scribing tip; and a defect repair system that repairs defects in a substrate *via application of a first voltage to the substrate and a*

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second voltage to the scribing tip, which is positioned at a location determined by the scanning probe microscope; wherein *defect location(s) and the substrate itself are mapped into a grid, each portion of which corresponds to an XY position.*"

Independent claims 13 and 14 set forth similar aspects. Such aspects of the claimed invention are clearly supported by the specification, for example, "Controller 220...maps substrate 240, or a portion thereof, into a grid wherein each portion of the grid corresponds to an XY position." (Page 7, lines 16-19.) Furthermore, "[w]hen defects are located, system 300 uses the defect map and data from the microscope measuring tip 316 to position the scribing tip 318 over the defect." (Page 9, lines 26-27.) "The electric field is applied by *biasing substrate 240 to a first voltage and tip 216 to a second voltage.*" (Page 8, lines 20-21.) Li *et al.* does not teach or suggest biasing each of the substrate and the scribing tip to create a voltage gradient to remove defects. Furthermore, Li *et al.* does not teach or suggest mapping a substrate into a grid pattern that can facilitate identification of defect location(s).

The Examiner contends that Li *et al.* teaches that defect locations and the substrate itself are mapped into a grid, each portion of which corresponds to an XY position, with reference to Figure 5 and Column 6, lines 37-44. However, contrary to the Examiner's contention, the referenced section of Li *et al.* describes a probing tool 86, and not a substrate. "FIG. 5 shows a probing tool 86 with an enlarge view 88 of the area 90. The enlarged view shows tips 92 with electrical connections 94 for communication with the central monitoring unit. An example of surfaces which can be probed in this manner includes silicon wafers and any other objects with a flat surface. In this embodiment, the microalignment system allows all the tips to be axially aligned with the surface to be probed." (Column 6, lines 37-44, *emphasis added*). Furthermore, the "grid mapping" referred to by the Examiner as being illustrated in Figure 5 is merely for the illustrative purpose of sectioning off a portion 90 of the scribing tool for magnification, as illustrated by the magnified portion 90. Neither the scribing tool nor the substrate described by Li *et al.* is grid-mapped as set forth in the subject claims.

Kuroda *et al.* fails to overcome the deficiencies of Li *et al.* with respect to the subject independent claims. Specifically, Kuroda *et al.* does not teach or suggest that *defect location(s) and the substrate itself are mapped into a grid, each portion of which corresponds to an XY position.* Rather, Kuroda *et al.* is merely directed to a system that

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employs current through a probe to oxidize portions of a recording medium in order to record information thereon. Nowhere in the Examiner's cited sections or elsewhere does Kuroda *et al.* even mention grid-mapping a substrate to facilitate defect location identification.

In view of at least the above, it is respectfully submitted that Li *et al.* and Kuroda *et al.* do not make obvious the subject invention as set forth in independent claims 1, 13, and 14 (and claims 3-5, 7, 11, 12, 16-18, and 21, which depend respectively there from). This rejection should be withdrawn.

II. Rejection of Claims 8 and 22 Under 35 U.S.C. § 103(a)

Claims 8 and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over obvious combination of Li, *et al.* and Kuroda *et al.*, as applied to claims 1 and 14 about and further in view of U.S. Patent No. 4,747,698 issued to Wickramasinghe, *et al.* This rejection should be withdrawn for at least the following reasons. Claims 8 and 22 depend from independent claims 1 and 14, respectively. Li *et al.* and Kuroda *et al.*, alone or in combination, do not teach or suggest every aspect set forth in the subject independent claims, as discussed in Section I. Wickramasinghe, *et al.* fails to overcome the deficiencies of Li *et al.* and Kuroda *et al.* with respect to independent claims 1 and 14.

Wickramasinghe, *et al.* describes a system for heating a non-contact probe, and does not teach or suggest grid-mapping a substrate as set forth in the subject claims. Furthermore, the aspect of a non-contact probe ("scanning tip...proximate to, but spaced from the structure..." See Abstract) is incongruous to the subject claims and the cited references, such that Wickramasinghe, *et al.* actually teaches against a probe tip in contact with a substrate. Moreover, Wickramasinghe, *et al.* is silent regarding grid-mapping a substrate, as set forth in the independent claims.

Accordingly, neither Li *et al.* nor Kuroda *et al.* nor Wickramasinghe, *et al.*, taken alone or in combination, make obvious independent claims 1 and 14, or claims 8 and 22, which depend respectively there from. Applicants' representative respectfully requests that this rejection be withdrawn.

III. Rejection of Claims 9-10, 12, 19 and 23-25 Under 35 U.S.C. § 103(a)

Claims 9-10, 12, 19 and 23-25 are rejected under 35 U.S.C. §103(a) as being

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unpatentable over the obvious combination of Li, I and Kuroda, *et al.* as applied to claims 1 and 14 above, and further in view of U.S. Patent No. 6,232,597 issued to Kley. This rejection should be withdrawn for at least the following reasons. Claims 9, 10, 12, 19, and 23-25 depend from independent claims 1 and 14, respectively. Li *et al.* and Kuroda *et al.*, alone or in combination, do not teach or suggest every aspect set forth in the subject independent claims, as discussed in Section I. Kley fails to overcome the deficiencies of Li *et al.* and Kuroda *et al.* with respect to independent claims 1 and 14. Specifically, Kley does not teach or suggest grid-mapping a substrate as set forth in the subject independent claims. Therefore, withdrawal of this rejection is respectively requested.

CONCLUSION

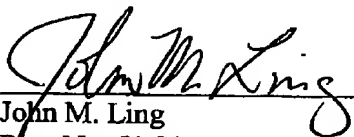
The present application is believed to be in condition for allowance in view of the above comments and amendments. A prompt action to such end is earnestly solicited.

In the event any fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063.

Should the Examiner believe a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact applicants' undersigned representative at the telephone number listed below.

Respectfully submitted,

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